PRELIMINARY ENGINEERING REPORT
2020 WATER SYSTEM IMPROVEMENTS

Prepared For

LARUE COUNTY WATER DISTRICT # 1
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I. Introduction

The Larue County Water District # 1 is a water utility controlled by three board members. These board members control the Larue County Water District #1 by voting on issues concerning the District at their monthly meeting. The District is regulated by the Kentucky Division of Water (DOW) and the Public Service Commission (PSC).

Through the proposed 2020 Water System Improvements Project, the District will construct a new elevated water storage tank, booster pump station, refurbish two existing tanks, office and maintenance building, make numerous connections and loop lines necessary to improve flow and pressures in the system and to improve water quality. The connections will serve to eliminate lines that are currently underserved and give the district valuable back up inter-connections. The lines will also serve a few customers who do not have water at the present time.

II. Existing Water System

The Larue County Water District # 1 (LCWD) operates a water distribution system that is classified by the Division of Water as Class II-D. This classification means that the system serves a population of at least 1,500 but not more than 15,000.

The LCWD is in excellent condition, having completed a large portion of the system within the last 15-25 years. The distribution system has continued to grow and now serves about 3500 customers through approximately 400 miles of water main ranging in size from 2-inch through 8-inch diameter. The LCWD also has seven (7) water storage tanks with a combined storage capacity of approximately 900,000 gallons.

The LCWD currently has seven sources of water supply; the City of New Haven, Hardin County Water District #2, Green River Valley Water District, City of Hodgenville, City of Bardstown, City of Campbellsville and Green-Taylor Water District. This should allow the water district ample supply of water and greatly increase the flexibility of the water district.

The LCWD takes great pride in its ability to supply quality water to its customers and is continually trying to extend its service to rural areas and provide safe potable water to the residents.

III. The Proposed Project

The LCWD proposes to extend water lines and make connections for overall improvement of flows, pressure and water quality to all areas of the system. The proposed water project will serve approximately 15 of 20 potential customers along the roads listed in Table 1 below (See Appendix B Project maps). A general breakdown of the project by road is also shown in Table 1. The proposed project will require approximately 2 miles of water line ranging in size from 4-inch to 6-inch diameter.

IV. Cost Summary

TABLE 1 - BREAKDOWN OF PROJECT BY ROADS

Road Name	Estimated Construction Cost, $	Water Line Length, Feet	Potential Customers	Line Size
Hwy 84-Spratt Road	50,000	5000	5	6
Jenkins Road Connection	25,000	500	1	6
Brashears Road-Oak Hill Road	25,000	500		4
Patton Road Connection	50,000	500	1	4
Flats Road-Hwy 84	50,000	500	1	6
Cruse Road-Parkers Grove -Shady Rest Road	50,000	500	2	6
Airline Road-Hwy 31-E	50,000	500	2	6
Catlett Road-both ends	50,000	500	2	6
Middle Creek Road-Harned-Mccubbins Road	50,000	500	2	6
Hwy 210 Connection	50,000	500	2	6
Ky 470 Re-Connection	50,000	500	2	6
Booster Pump Station McDowell Road	150,000	NA		
100,000 Gallon Elevated Storage	500,000	NA		
Refurbish Two Tanks	250,000	NA		
New Office Building	1,600,000	NA		
Totals	3,000,000	10,000	20	

TABLE 2 - LARUE COUNTY WATER DISTRICT #1
2020 WATER LINE EXTENSIONS
ESTIMATED CONSTRUCTION COST

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	6" PVC Water Line	9,500	LF	$10.00	$95,000
2	4" PVC Water Line	500	LF	$10.00	$5,000
3	New Office/Maintenance Building	1	EA	$1,600,000.00	$1,600,000
4	Steel Casing, Bore & Jack	2000	LF	$100.00	$200,000
5	6" Gate Valve	20	EA	$1,100.00	$22,000
6	4" Gate Valve	10	EA	$800.00	$8,000
7	Booster Pump Station	1	EA	$150,000.00	$150,000
8	Flush Hydrant	12	EA	$3,000.00	$36,000
9	4" Blow Off Assembly	6	EA	$1,000.00	$6,000
10	Creek Crossing	650	LF	$100.00	$65,000
11	Meter Setting	15	EA	$1,000.00	$15,000
12	Connection	24	EA	$2,000.00	$48,000
13	100,000 Gallon Water Storage Tank	1	EA	$600,000.00	$500,000
14	Refurbish Two Tanks	2	EA	$125,000.00	$250,000
TOTAL					**$3,000,000**

TABLE 3 - ESTIMATED PROJECT COST

Construction Cost	$3,000,000
Contingencies	150,000
Engineering	210,000
Inspection	115,000
Legal and Administrative	10,000
Miscellaneous (PE Report, Archeological, PSC, Environmental Ass.)	25,000
Land and/or Rights	250,000
Interest During Construction	40,000
TOTAL ESTIMATED PROJECT COST	**$3,800,000**

V. Funding

Proposed funding for this project is being made available as shown in Table 4.

TABLE 4 - FUNDING SOURCES

Rural Development Grant	$1,000,000
Rural Development Loan	$2,800,000
TOTAL FUNDING	**$3,800,000**

VI. Rate Analysis

A. Expenses

1. General

There are normally three components to be considered in calculating a system's total expenses. They are Operation and Maintenance Costs (O&M), Annual Debt Service (payment for principal and interest on the bonded indebtedness) and Coverage (monthly "set aside" from revenues to insure payment of Debt Service in "lean" times).

2. Operation and Maintenance Costs

The Operation and Maintenance costs are the largest and most variable portion of the budget. With historical data, a very good estimate of these costs can be made. Table 5 shows: the O&M costs for 2016; the estimated O&M costs for the proposed project; and the Total O&M costs for the existing, current and proposed projects.

TABLE 5 - PROPOSED O&M EXPENSES

Expense Description(3)	Existing System(1)	Proposed Project (2)	Total
Water Purchased	$396,541	$3,500	$400,041
Power Purchased	26,037	250	$26,287
Meter Labor and Expense	323,353	2,500	$325,853
Repairs and Maintenance	141,861	250	$142,111
Administrative Expense	$286,602	$2,000	$288,602
Depreciation	$380,186	$3,000	$383,186
TOTAL O&M EXPENSES	**$1,557,367**	**$11,500**	**$1,568,867**

(1) The values listed are based on the 2016 fiscal year audit.
(2) Assumes 15 customers using 3300 gallons per month.
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3. Debt Service

The annual debt service (payment for principal and interest) is established in the bond ordinance for each bond issue. The actual payment is dependent on the interest rate and term of the bond issue. The RD's bonds are for a term of 40 years with principal payments deferred for the first two years. Based on the 2016 audit, the Larue County Water District #1 will have an annual P&I payment of approximately $191,502 in existing bonds for the year 2020.

The proposed project will have a bond issue of $2,800,000 at an estimated interest rate of 2.5% interest. The annual P&I Payment is estimated to be $112,000.

4. Coverage

Coverage is RD's requirement for establishing a monthly "set aside" to ensure payment of debt service should the utility have a "lean" year or some major unexpected cost. This money is a percent of the monthly revenues with a pre-established "cap." It is normally placed in a reserve account and is not available to the Utility for O&M Expenses without RD's approval.

The normal percent used by RD's for Coverage is 10% on each bond issue. That was the percent that was used in the following rate analysis for the LCWD.

5. Summary of Expenses

TABLE 6 - SUMMARY OF EXPENSES

Service Area	Annual O&M Expenses	Debt Service	Coverage At 10%	Total
Existing System	$1,557,367	$191,502(1)	$19,150	$1,768,019
Proposed Project	$11,500	$112,000	$11,200	$134,700
TOTAL	**$1,568,867**	**$303,502**	**$30,350**	**$1,902,719**

(1) Debt Service due in 2020 according to 2016 audit.

Therefore, the LCWD needs to collect a minimum of $1,902,719 annually to break even. Any amount in excess of that figure is surplus and can be used to make additional capital improvements to the water system and/or make repairs to the existing system.

B. Income Required

1. General

Income for a utility comes from several sources: the sale of water; interest income on investments; fees received from disconnect/reconnect/late charges and surcharges. The latter is an attempt to extend service into new areas by letting those that receive the service pay a more proportionate share of the cost. It also is an attempt at not making the first customers in a utility continually pay for expansion for that system.

The LCWD has not previously used a surcharge and it is felt that a surcharge will not be required for the proposed project.

2. Customers and Average Usage

The customer count and usage were provided by the LCWD.

TABLE 7 - SUMMARY OF CUSTOMER COUNT AND USAGE

Service Area	Number of Customers	Average Monthly Usage, Gallons
Existing System	3300	3300
Proposed Project	15	3300

(1) Assumed same monthly usage since the socio-economic makeup of the proposed customers is equal to the existing customers.

3. Estimated Income

Based on the audited financial statements for the year ending 2016, operating income from water sales alone was $1,429,889. Based on adding 15 new customers on the proposed project, at an average water usage rate of approximately $23.27, the new customers should generate an additional $4,188.00 in income by 2020 year end. Table 8 includes a summary of the estimated income

calculations from water sales alone. Please see the Actual Water Usage Analysis and Forecasts in Appendix C.

TABLE 8 - ESTIMATED INCOME FROM WATER SALES ALONE

Service Area	Year End 2020	Year End[(1)] 2021	Year End[(1)] 2022	Projected[(1)] 2023
Existing System	$1,582,952	$1,622,526	$1,663,089	$1,704,667
Proposed Project	$4,188	$4,292	$4,400	$4,510
TOTAL ESTIMATED ANNUAL INCOME				**$1,709,177**

(1) Project income includes 2.5% growth in system per year.

C. Summary of Rate Analysis

TABLE 9 - SUMMARY OF RATE ANALYSIS

Estimated Annual Expenses for Entire System (Including Proposed Project)	$1,902,719
Estimated Income for Entire System (Including Proposed Project)	$1,709,177
Estimated Surplus	$(-193,541)

VII. Recommendation

It is recommended, with a rate increase, that the project is funded by a Rural Development Loan and Grant and a letter of conditions be issued as soon as possible. The rate increase will be described in detail in the Summary Addendum.

Based on the above calculations, proposed rate increase, along with the assumptions made, RD should allow the LCWD to construct the proposed project. It appears they can meet all current and proposed debts and expenses, and still have a surplus of funds.

APPENDIX A

PROJECTS MAPS

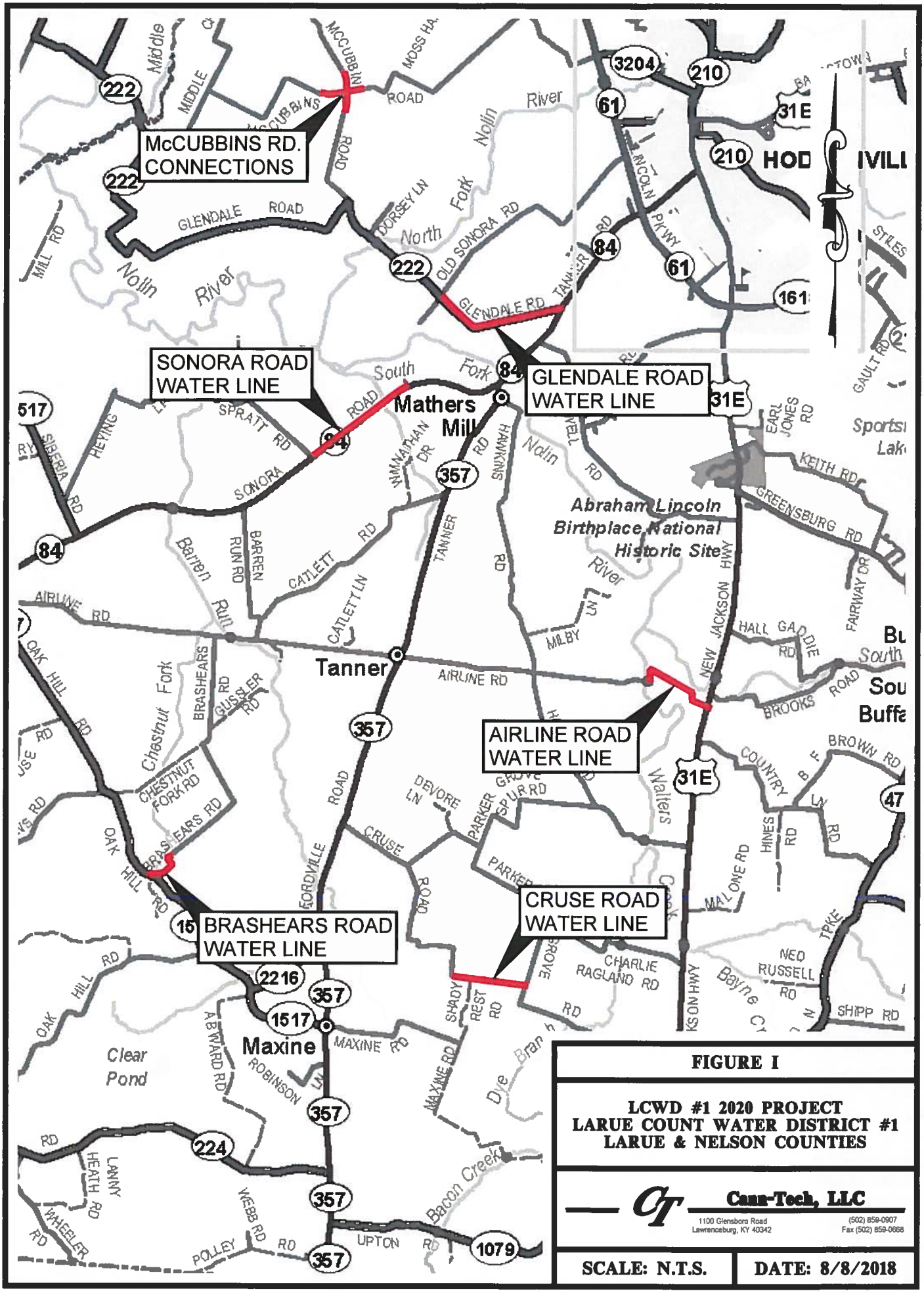

FIGURE I

LCWD #1 2020 PROJECT
LARUE COUNT WATER DISTRICT #1
LARUE & NELSON COUNTIES

Cann-Tech, LLC
1100 Glensboro Road
Lawrenceburg, KY 40342
(502) 859-0907
Fax (502) 859-0668

SCALE: N.T.S. | **DATE: 8/8/2018**

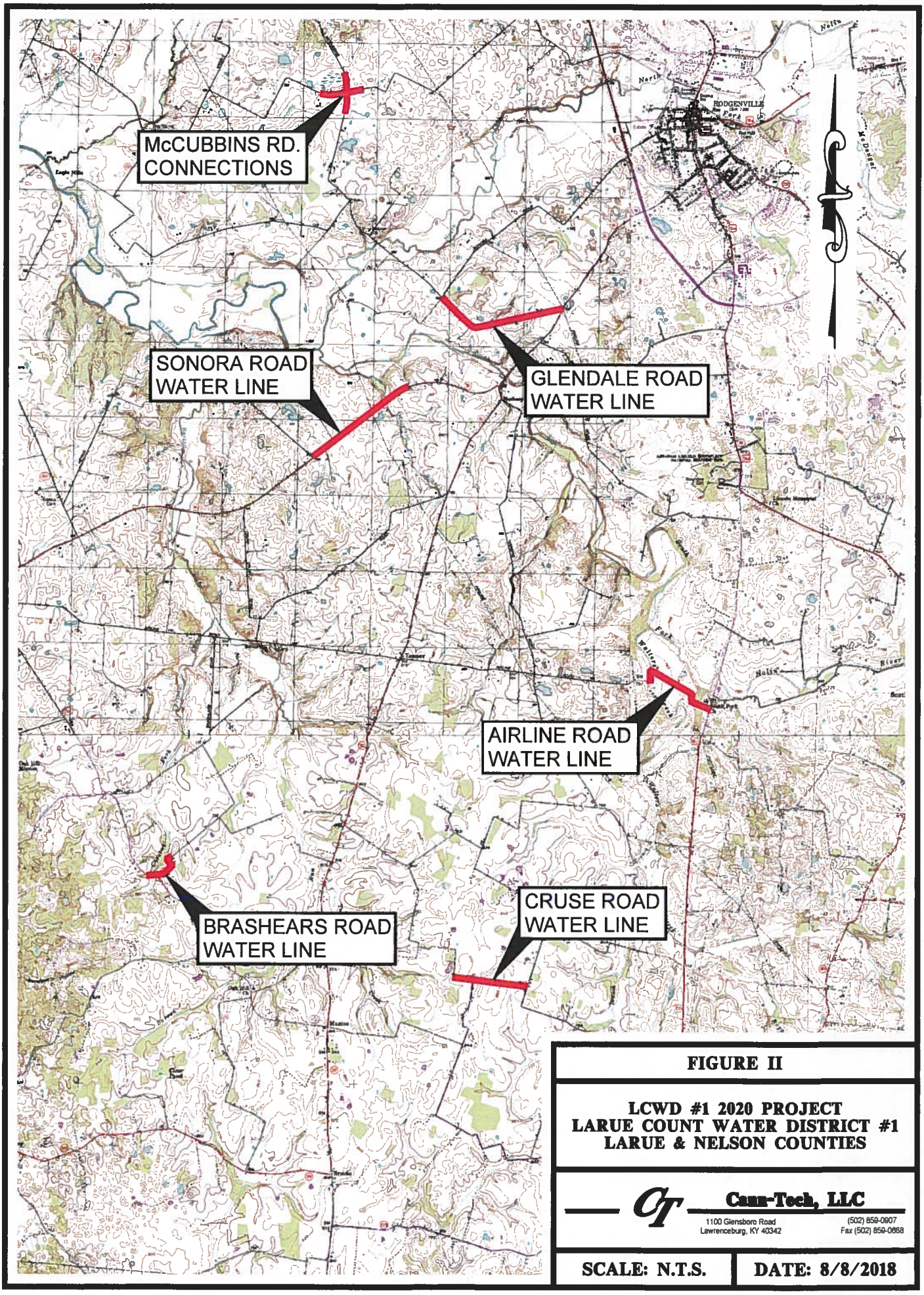

FIGURE II

LCWD #1 2020 PROJECT
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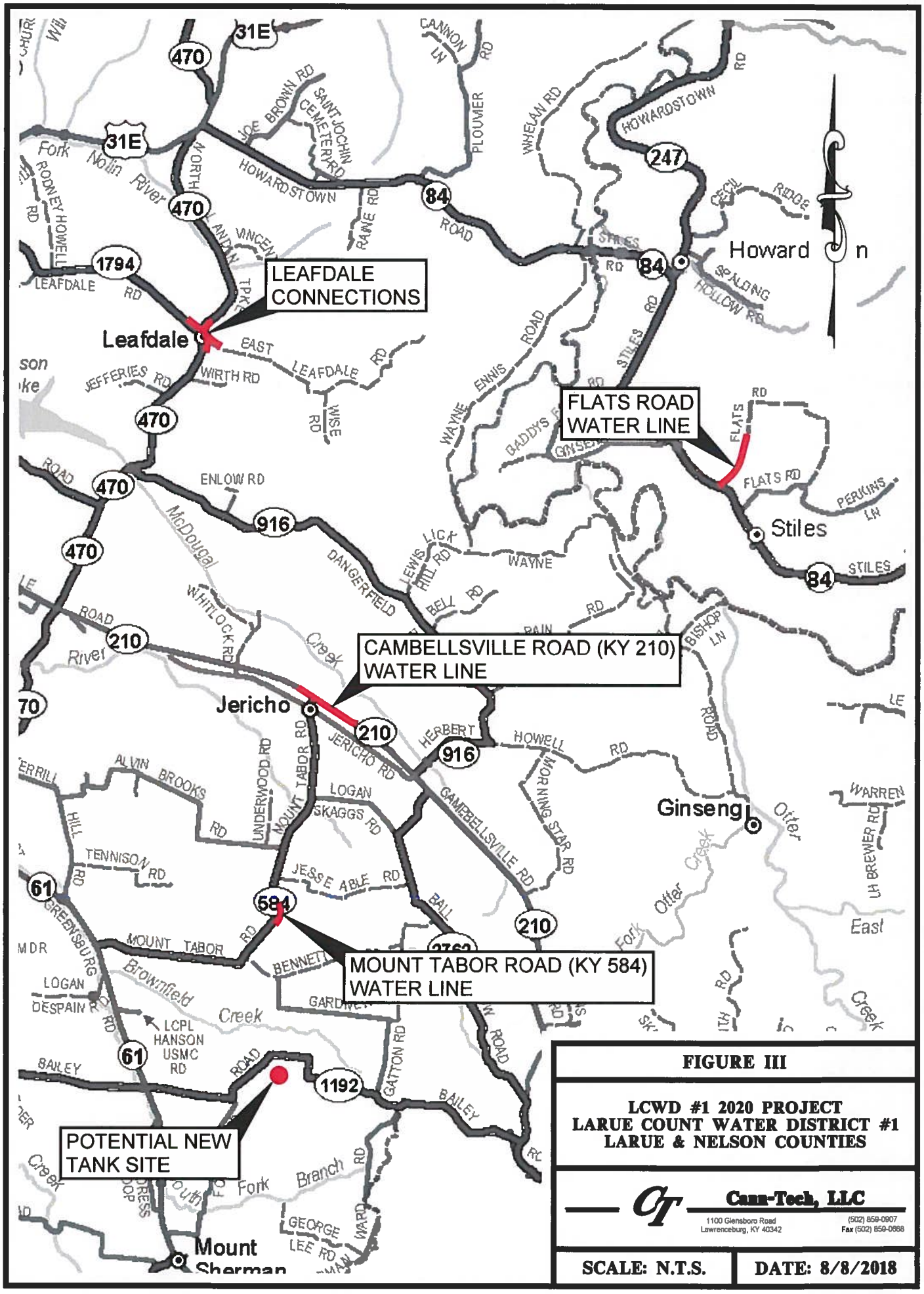

FIGURE III

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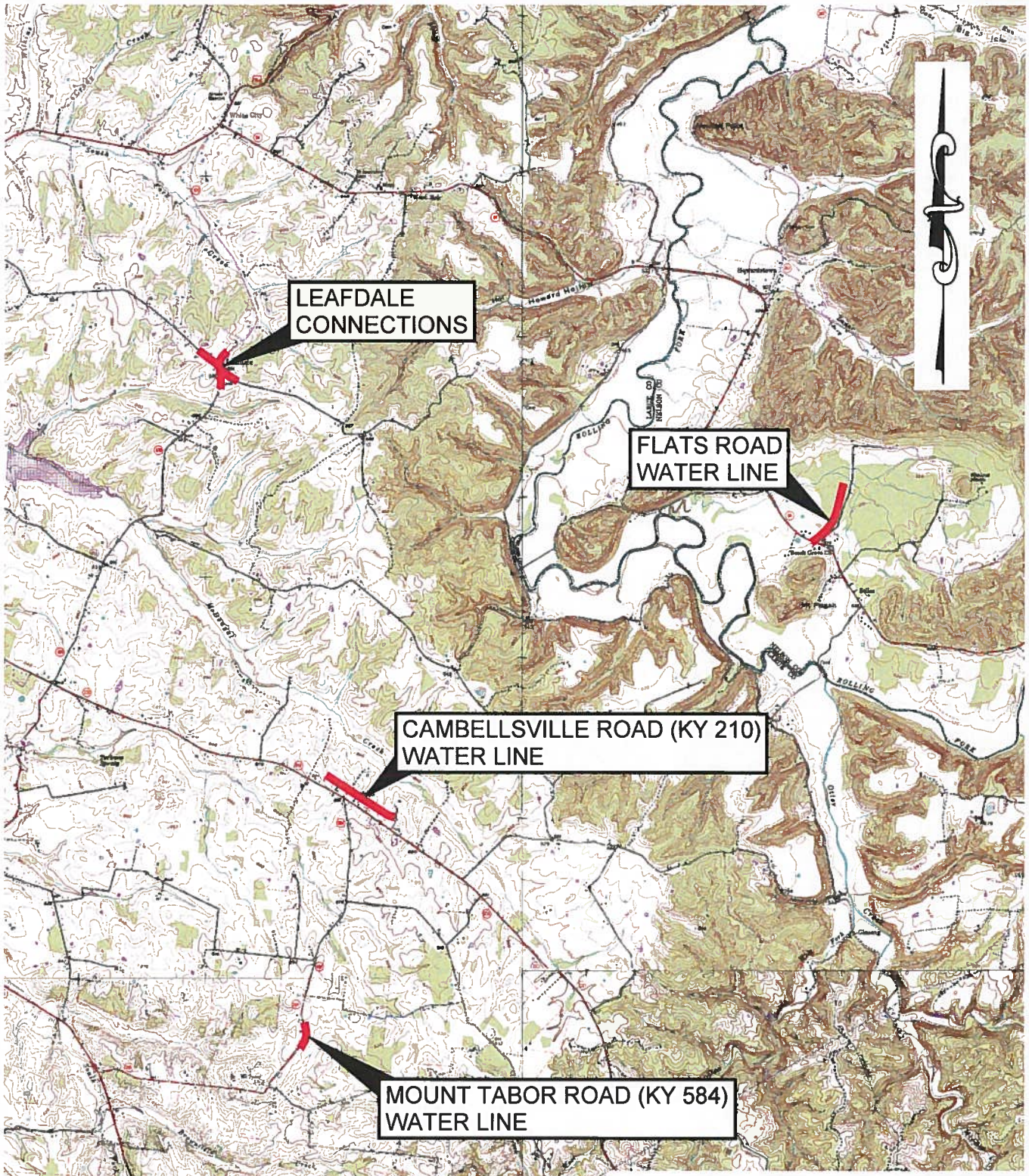

FIGURE IV

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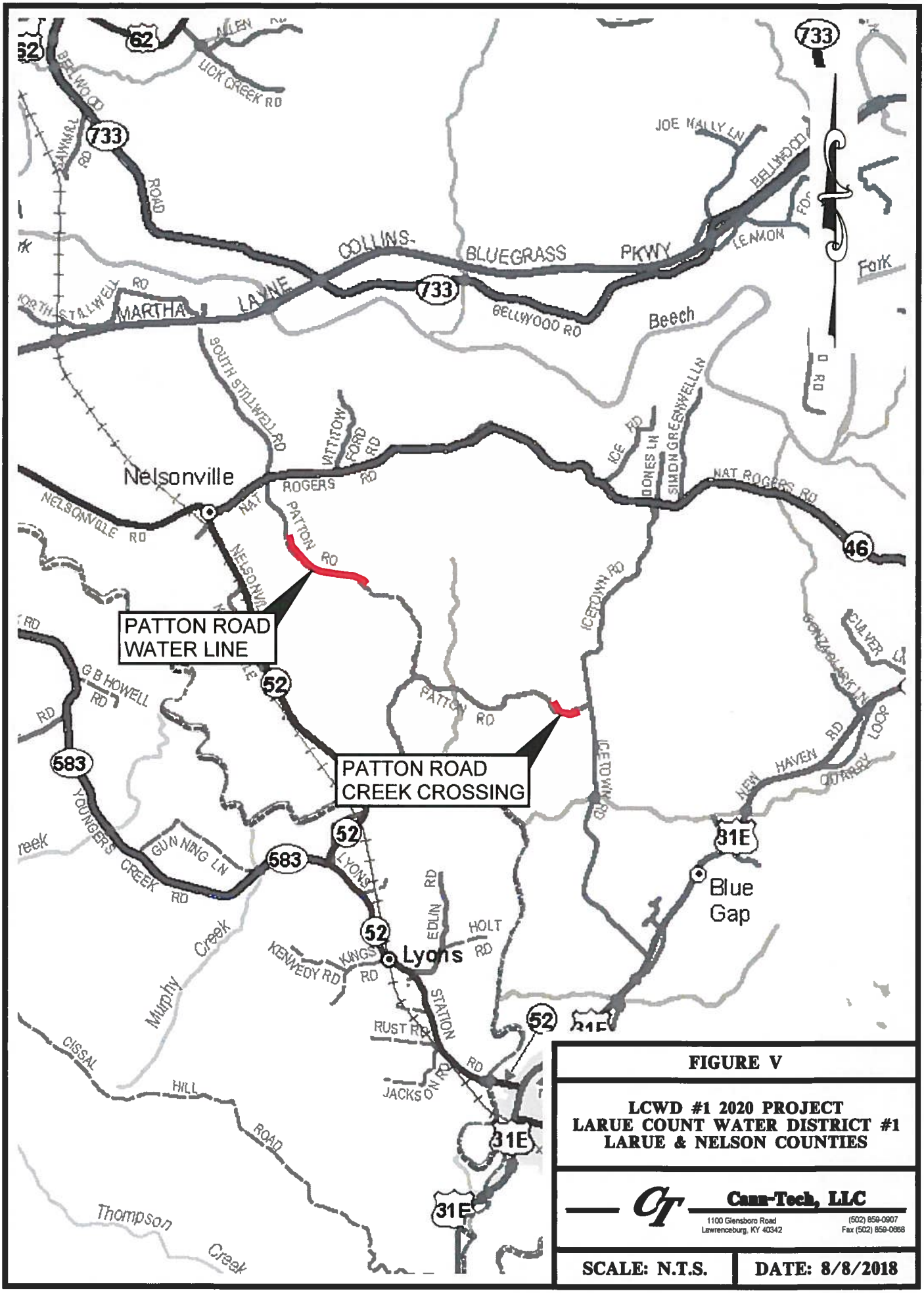

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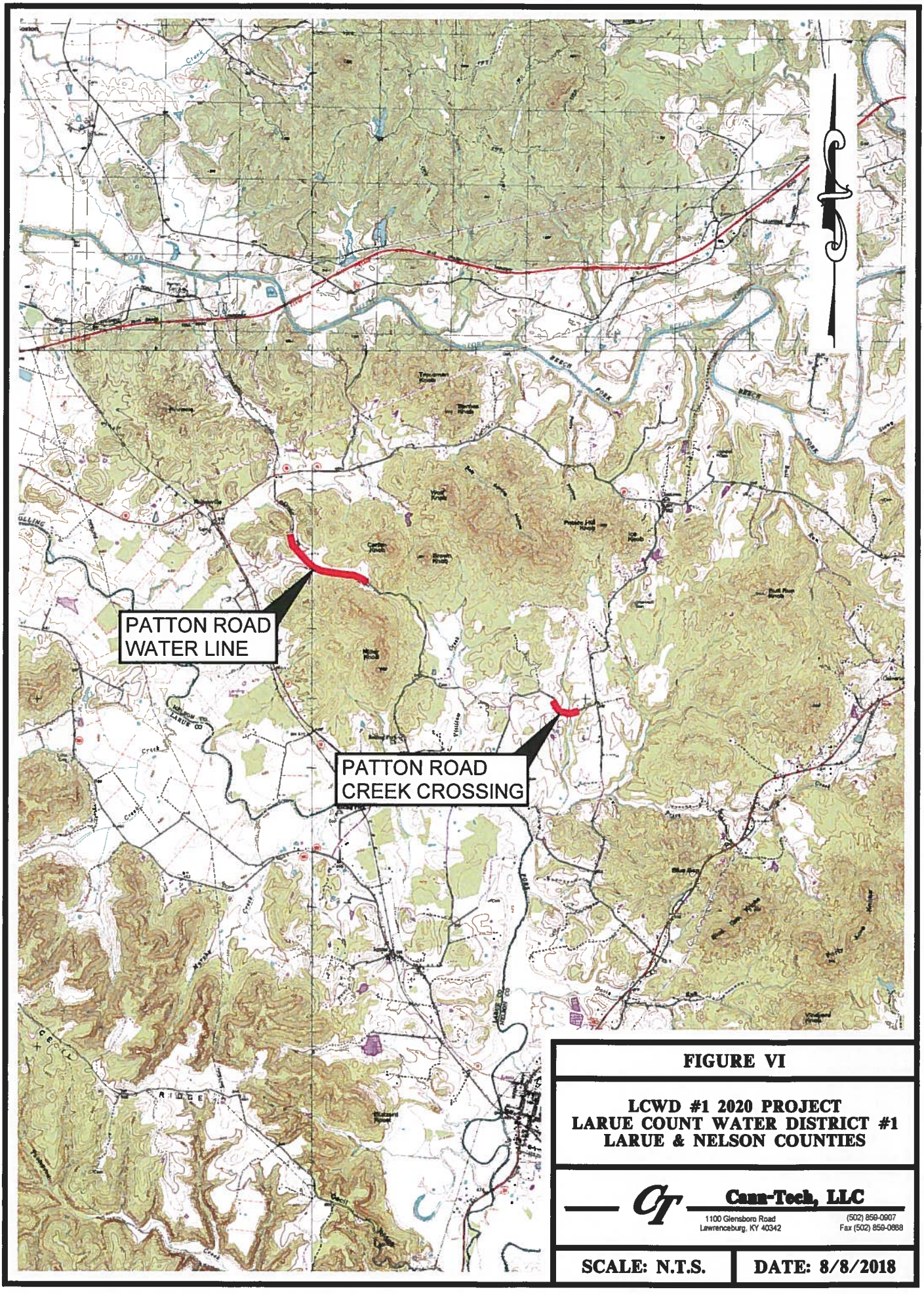

FIGURE VI

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